

WHAT IS CLAIMED IS:

1. An apparatus for rotationally molding panel structures, comprising:
two matable mold elements, each mold element including
a generally planar molding surface,
peripheral edges,
at least one molding element selected from the group consisting of
depressions and ridges,
a plurality of rails fixedly attached to attached to said generally planar
molding surface, and
a plurality of adjustable rails slideably attached to said generally planar
molding surface,
wherein said adjustable rails and fixed rails cooperatively define a
mold cavity a mold cavity when the mold elements are mated
together; and
a heating means to raise the temperature of a resin above its glass transition
temperature.
2. The apparatus of claim 1, wherein the rails are adapted to receive trim
members that are molded integrally into the panel structure.
3. The apparatus of claim 2, wherein the mold elements further include slot
elements that slideably receive the adjustable rails.
4. An apparatus for forming panel structures, comprising:
a panel mold element including
a generally planar molding surface and distal edges,
at least one edge member disposed on said generally planar molding
surface,
at least one complementary adjustable edge member disposed on said
generally planar molding surface,
said generally planar molding surface and said edge members
cooperatively defining at least a portion of a panel mold cavity;
and

a heating means to soften a resin to be molded so that it can conform to the mold cavity.

5. The apparatus of claim 4, wherein said at least one adjustable member is frictionally engaged with said mold element.

6. The apparatus of claim 4, including two adjustable members and two fixed members.

7. The apparatus of claim 4, wherein the adjustable members and fixed members are rail members.

8. The apparatus of claim 4, wherein the adjustable members and fixed members are configured to receive trim members that are molded integrally into the panel structure.

9. The apparatus of claims 1 or 8, wherein the mold cavity is also defined by a trim member spanning a gap between an adjustable member and a fixed member.

10. The apparatus of claim 4, wherein the heating means is an oven.

11. The apparatus of claim 4, wherein the thermoforming apparatus is selected from the group consisting of a rotomolding apparatus and a vacuum forming apparatus.

12. The apparatus of claim 9, further comprising a trim member spanning a gap between an adjustable member and a fixed member.

13. A method for forming panel structures, comprising:
providing a panel mold element including:

a generally planar molding surface and distal edges,
at least one edge member disposed on said generally planar molding surface, and
at least one complimentary adjustable edge member disposed on said generally planar molding surface,
said generally planar molding surface and edge members cooperatively defining at least a portion of a panel mold cavity;

introducing a resin into said mold cavity;

heating the resin so that it conforms to the mold cavity;

cooling the mold element; and

removing the panel structure from the mold.

14. The method of claim 13, further comprising adjusting at least one adjustable member to alter the dimensions of the mold cavity.

15. The method of claim 13, wherein said at least one adjustable member is frictionally engaged with said mold element.

16. The method of claim 13, wherein the resin is a thermoplastic.

17. The method of claim, 13, wherein the mold element includes two adjustable members and two fixed members and wherein the adjustable members and fixed members are rail members.

18. The method of claim 13, further comprising the step of inserting into the mold element a trim member that spans a gap between an adjustable member and a fixed member, such that the trim member helps define the mold cavity and is integrally into the panel structure.

19. The method of claim 13, wherein the mold element is heated by an oven.

20. The method of claim 13, wherein the mold element is installed in an apparatus is selected from the group consisting of a rotomolding apparatus and a vacuum forming apparatus.

21. A method for rotationally molding a plastic part, comprising:
 adding a resinous material to a rotomold;
 adding reinforcing elements to the rotomold;
 heating the rotomold such that the resinous material and reinforcing elements form a molded part including at least one wall having an outer surface and an inner surface, wherein the reinforcing elements are disposed substantially throughout the wall of the molded part;
 cooling the rotomold; and
 removing the molded part from the rotomold.

22. The method of claim 21, wherein the resin is a thermoplastic.

23. The method of claim 21, wherein the reinforcing elements are made from a material selected from the group consisting of carbon fibers and glass fibers.

24. The method of claim 23, wherein the fibers protrude into an internal cavity of the molded part.

25. The method of claim 21, further comprising the step of providing a mold element including:

a generally planar molding surface and distal edges,
at least one edge member disposed on said generally planar molding
surface, and
at least one complimentary adjustable edge member disposed on said
generally planar molding surface,
said generally planar molding surface and said edge members
cooperatively defining at least a portion of a mold cavity.

26. The method of claim 21, wherein the resinous material is thermoplastic.